

## **REMARKS**

Applicant respectfully requests reconsideration of the present application.

### **Rejections based on 35 U.S.C. § 103(a)**

#### A) Applicable Authority

Title 35 U.S.C. § 103(a) declares, a patent shall not issue when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The Supreme Court in *Graham v. John Deere* counseled that an obviousness determination is made by identifying: the scope and content of the prior art; the level of ordinary skill in the prior art; the differences between the claimed invention and prior art references; and secondary considerations. See *Graham v. John Deere Co.*, 383 U.S. 1 (1966). Also, the Supreme Court elaborated it will be necessary for [the Office] to look at interrelated teachings of multiple [prior art references]; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by [one of] ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the [patent application].” *KSR v. Teleflex*, No. 04-1350, 550 U.S. 398 (2007).

#### B) Obviousness Rejections Based on U.S. Patent No. 6, 421, 4453 (Kanevsky) in view of U.S. Patent No. 5,801,704 (Oohara).

Claims 1, 5, 10-13, 16, 18, 39-51 and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky et al., U.S. Patent No. 6,421,453 in view of Oohara. Applicant respectfully contends that amended independent claims 1 and 11 are allowable over the prior art of record for the following reasons.

Amended independent claim 1 recites a system that facilitates a user interface. The system comprises a tracking component, at least two video capturing sources, and a 3-D imaging component. The tracking component detects motion of a group of moving pixels included in two or more images. The tracking component detects motion when the sum of the absolute differences of at least one pixel within the two or more images is above a specified threshold. The at least two video capturing sources receive a user command to control the computer system. The user command is received from a gesture extracted from the group of moving pixels included in the two or more images captured by the at least two video capturing sources. The control of the computer system includes controlling computer programs by manipulating onscreen objects without a cursor. The 3-D imaging component receives the gesture in the form of a gesture image, processes the gesture image, and interprets the gesture image to execute the user command for control of the computer system and the imaging component permits different users to select different commands from a plurality of user commands executable by the computer system, to associate with the received gesture such that the received gesture executes the user command based on a user profile and on a particular application executing on the computer system.

Applicant respectfully submits that the prior art, including Kanevsky and Oohara, fail to describe or suggest *a tracking component to detect motion of a group of moving pixels included in two or more images, wherein the tracking component detects motion when the sum of the absolute differences of at least one pixel within the two or more images is above a specified threshold*, as recited in amended independent claim 1. The Office contends that Kanevsky, at col. 5, ll. 10-16; col. 6, ll. 56-67; col. 7, ll. 55-66; col. 31, ll. 7-15; and col. 28, ll. 19-26, in

combination with Oohara, at FIG. 3 and col. 1, ll. 64-67. At best, Kanvesky describes a recognition system that provides access control based on pre-stored gestures saved in by an authentication system. Kanvesky fails to describe controlling a computer based on the gestures as conceded by the Office. Further, Kanvesky does not describe or suggest detecting motion via at least two video capturing sources and detecting the sum of the absolute differences of at least one pixel among the captured images. Oohara fails to remedy the deficiencies of Kanvesky. At best, Oohara, at col. 4, ll. 19-45, describes manipulating an object based on glove orientation. Nothing in Oohara describes or suggests a detecting motion using sum of the absolute differences across at two images captured by at least two video sources. Further the combination of Kanvesky and Oohara is deficient because the prior art fails to describe or suggest the threshold value and observation of the sum of the absolute differences as required by amended independent claim 1.

Unlike Kanvesky and Oohara, alone or in combination, the invention of amended independent claim 1 requires, among other things, a tracking component to detect motion of a group of moving pixels included in two or more images, wherein the tracking component detects motion when the sum of the absolute differences of at least one pixel within the two or more images is above a specified threshold. Kanvesky and Oohara fail to expressly or inherently describe or suggest all elements of the invention of amended independent claim 1. Accordingly, for at least the above reasons, Applicant respectfully requests withdrawal of the obviousness rejection and allowance of amended independent claim 1.

Dependent claims 5, 7-8, 10, 39-44, and 53 further define novel features of the invention of amended independent claim 1 and each depend directly from independent claim 1. Accordingly, for at least the reasons set forth above with respect to independent claim 1,

dependent claims 5, 7-8, 10, 39-44, and 53 are believed to be in condition for allowance by virtue of their dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 5, 7-8, 10, 39-44, and 53 are respectfully requested.

Amended independent claim 11 recites a system that facilitates a user interface in a medical environment. The system includes one or more cameras, a 3-D imaging component, and a wireless control device. The one or more cameras capture a user command to control an object of a computer system is received as a gesture. The object is a device connected to the computer or an application running on the computer. The 3-D imaging component receives the gesture in the form of a gesture image, processes the gesture image, and interprets the gesture image to execute the user command for control of the computer system. The imaging component permits user selection of association of gestures with user commands selected from a plurality of user commands executable by the computer, wherein different users employ different gestures for execution of a given command, the association being determined during execution based on a user profile and on a particular application executing on the computer system. The wireless control device worn by the user comprises sensors that measure orientation of the wireless control device. The orientation information is utilized to determine selection of the object. The gesture is utilized to control the object of the computer system without a cursor.

Applicant submits that the prior art including, Kanvesky and Oohara, fails to describe or suggest, *the imaging component permits user selection of association of gestures with user commands selected from a plurality of user commands executable by the computer, wherein different users employ different gestures for execution of a given command, the association being determined during execution based on a user profile and on a particular application executing on the computer system*, as required by amended independent claim 11. The Office contends that

Kanevsky, at col. 5, ll. 10-16; col. 7, ll. 55-66; col. 8, ll. 24-26; col. 31, ll. 7-15; col. 32, ll. 51-56, and col. 28, ll. 19-26, in combination with Oohara, at FIG. 1 and col. 1, ll. 64-67. At best, Kanvesky describes a recognition system that provides access control based on pre-stored gestures saved in by an authentication system. Kanvesky fails to describe controlling a computer based on the gestures as previously conceded by the Office. Further, Kanvesky does not describe or suggest allowing each user of the system to associate individual gestures with specific commands that control the computer system. Oohara fails to remedy the deficiencies of Kanvesky. At best, Oohara, at col. 4, ll. 19-45, describes manipulating an object based on glove orientation. Nothing in Oohara describes or suggests associating a gesture with specific commands to allow the computer system to individualize gestures used to control the computer system. Further the combination of Kanvesky and Oohara is deficient because the prior art fails to describe or suggest user selection of association between gestures and commands as required by amended independent claim 11.

Unlike Kanvesky and Oohara, alone or in combination, the invention of amended independent claim 11 requires, among other things, the imaging component permits user selection of association of gestures with user commands selected from a plurality of user commands executable by the computer, wherein different users employ different gestures for execution of a given command, the association being determined during execution based on a user profile and on a particular application executing on the computer system. Kanvesky and Oohara fail to expressly or inherently describe or suggest all elements of the invention of amended independent claim 11. Accordingly, for at least the above reasons, Applicant respectfully requests withdrawal of the obviousness rejection and allowance of amended independent claim 11.

Dependent claims 12-13, 16, 18, and 45-51 further define novel features of the invention of independent claim 11 and each depend directly from amended independent claim 11. Accordingly, for at least the reasons set forth above with respect to amended independent claim 11, dependent claims 12-13, 16, 18, and 45-51 are believed to be in condition for allowance by virtue of their dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 12-13, 16, 18, and 45-51 are respectfully requested.

C) Obviousness Rejections Based on Kanevsky in view of U.S. Patent No. 7,394,346 (Bodin).

Claims 19, 25, 30-33, and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky in view of Bodin. Applicant respectfully submits that amended independent claims 19, 30, and 33 are allowable over the prior art of record for the following reasons.

Amended independent claim 19 recites a method of controlling a computer system using a gesture. Different users select different gestures for execution of a user command selected from a plurality of commands on the computer system. A user is identified based in part on a radio frequency signal assigned to the user. In turn, one aspect of a gesture in the form of a 3-D gesture image is captured. A depth of the captured gesture is calculated to ignore captured gestures that are outside of an engagement volume associated with the computer system. The 3-D gesture image is processed and a user profile is utilized to determine an associated user command preselected by the user to associate with the received gesture. The user command is executed to effect manipulation of an object of the computer system based on the selection

obtained from a user profile and on a particular application executing on the computer system.

The object is a device connected to the computer or an application running on the computer.

Applicant submits that the prior art including, Kanvesky and Bodin, fails to describe or suggest, *calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system*, as required by amended independent claim 19. The Office contends that Kanevsky, at col. 5, ll. 10-16; col. 6, ll. 61-67; col. 7, ll. 55-66; col. 31, ll. 7-15; col. 32, ll. 51-56, and col. 28, ll. 19-26, in combination with Bodin, at Abstract and col. 2, ll. 10-22. At best, Kanvesky describes a recognition system that provides access control based on pre-stored gestures saved in by an authentication system. Kanvesky fails to describe controlling a computer based on the gestures as previously conceded by the Office. Further, Kanvesky does not describe or suggest calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system. Bodin fails to remedy the deficiencies of Kanvesky. At best, Bodin describes a security pointer used to create specific authorization patterns. Nothing in Bodin describes or suggests calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with computer system. Further the combination of Kanvesky and Bodin is deficient because the prior art fails to describe or suggest the engagement volume as required by amended independent claim 19.

Unlike Kanvesky and Bodin, alone or in combination, the invention of amended independent claim 19 requires, among other things, calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system. Kanvesky and Bodin fail to expressly or inherently describe or suggest all elements of the invention of amended independent claim 19. Accordingly, for at least the above reasons,

Applicant respectfully requests withdrawal of the obviousness rejection and allowance of amended independent claim 19.

Dependent claims 24-25 and 27-28 further define novel features of the invention of amended independent claim 19 and each depend, directly or indirectly, from amended independent claim 19. Accordingly, for at least the reasons set forth above with respect to amended independent claim 19, dependent claims 24-25 and 27-28 are believed to be in condition for allowance by virtue of their dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 24-25 and 27-28 are respectfully requested.

Amended independent claim 30 recites a method of controlling a computer system in an operating room environment. The computer system is calibrated according to a user profile of individualized gesture data by presenting associated gestures using at least one or more body motions. The gesture data is mapped to at least one user command selected from a plurality of user commands that is executable by the computer system. The mapping is also based on a particular application executing on the computer system. A user profile is invoked according to a unique radio frequency signal that identifies a user. The gestures are presented to a 3-D imaging system for capture and processing. The depth of the captured gesture is calculated to ignore captured gestures that are outside of a roaming engagement volume associated with the computer system. The 3-D renderings of the gestures are interpreted to retrieve the associated user commands. The user commands are executed to affect manipulation of an object of the computer system.

Applicant submits that the prior art including, Kanvesky and Bodin, fails to describe or suggest, *calculating depth of the captured gesture to ignore captured gestures that*



*are outside of a roaming engagement volume associated with the computer system*, as required by amended independent claim 30. The Office contends that Kanevsky, at col. 5, ll. 10-16; col. 6, ll. 56-67; col. 7, ll. 48-66; col. 8, ll. 24-26; col. 31, ll. 7-15; col. 32, ll. 51-56, and col. 28, ll. 19-26, in combination with Bodin, at Abstract and col. 2, ll. 10-22. As discussed above, Kanvesky does not describe or suggest, among other things, calculating depth of the captured gesture to ignore captured gestures that are outside of a roaming engagement volume associated with the computer system. Bodin fails to remedy the deficiencies of Kanvesky. At best, Bodin describes a security pointer used to create specific authorization patterns. Nothing in Bodin describes or suggests calculating depth of the captured gesture to ignore captured gestures that are outside of a roaming engagement volume associated with the computer system. Further the combination of Kanvesky and Bodin is deficient because the prior art fails to describe or suggest the engagement volume as required by amended independent claim 30.

Unlike Kanvesky and Bodin, alone or in combination, the invention of amended independent claim 30 requires, among other things, calculating depth of the captured gesture to ignore captured gestures that are outside of a roaming engagement volume associated with the computer system. Kanvesky and Bodin fail to expressly or inherently describe or suggest all elements of the invention of amended independent claim 30. Accordingly, for at least the above reasons, Applicant respectfully requests withdrawal of the obviousness rejection and allowance of amended independent claim 30.

Dependent claims 31-32 further define novel features of the invention of amended independent claim 30 and each depend directly from amended independent claim 30. Accordingly, for at least the reasons set forth above with respect to amended independent claim 30, dependent claims 31-32 are believed to be in condition for allowance by virtue of their

dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 31-32 are respectfully requested.

Amended independent claim 33 recites a computer-readable medium having computer-executable instructions for performing a method of controlling a computer system using gestures. Gesture calibration data is recited in the form of 3-D images of the gestures. The gesture calibration data is mapped to at least one user command that is executable by the computer system. The mapping also being based on a particular application executing on the computer system. The mapped gesture calibration data is associated with a user profile of a user. Different users are allowed to select different commands to associate with the received gesture and the different commands are executable by the computer system. The user profile is invoked according to a unique radio frequency signal received from the user. Subsequent 3-D images of the gestures received via a camera system are processed using the profile. In turn, a depth of the captured gesture is calculated to ignore captured gestures that are outside of an engagement volume associated with the computer system. The subsequent 3-D images of the gestures are interpreted to retrieve the associated user commands. The user commands are executed to effect manipulation of a hardware or software object of the computer system.

Applicant submits that the prior art including, Kanvesky and Bodin, fails to describe or suggest, *calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system*, as required by amended independent claim 33. The Office contends that Kanevsky, at col. 5, ll. 10-16; col. 6, ll. 61-67; col. 7, ll. 55-66; col. 31, ll. 7-15; col. 32, ll. 51-56, and col. 28, ll. 19-26, in combination with Bodin, at Abstract and col. 2, ll. 10-22. At best, Kanvesky describes a recognition system that provides access control based on pre-stored gestures saved in by an

authentication system. Kanvesky fails to describe controlling a computer based on the gestures as previously conceded by the Office. Further, Kanvesky does not describe or suggest calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system. Bodin fails to remedy the deficiencies of Kanvesky. At best, Bodin describes a security pointer used to create specific authorization patterns. Nothing in Bodin describes or suggests calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system. Further the combination of Kanvesky and Bodin is deficient because the prior art fails to describe or suggest the engagement volume as required by amended independent claim 33.

Unlike Kanvesky and Bodin, alone or in combination, the invention of amended independent claim 33 requires, among other things, calculating depth of the captured gesture to ignore captured gestures that are outside of an engagement volume associated with the computer system. Kanvesky and Bodin fail to expressly or inherently describe or suggest all elements of the invention of amended independent claim 33. Accordingly, for at least the above reasons, Applicant respectfully requests withdrawal of the obviousness rejection and allowance of amended independent claim 33.

Dependent claims 34-35 further define novel features of the invention of amended independent claim 33 and each depend directly from amended independent claim 30. Accordingly, for at least the reasons set forth above with respect to amended independent claim 30, dependent claims 34-35 are believed to be in condition for allowance by virtue of their dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 34-35 are respectfully requested.

D) Obviousness Rejections Based on Kanevsky in view of Bodin and Oohara.

Claims 24, 27-28 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky in view of Bodin, further in view of Oohara. Applicant respectfully traverses the following rejections.

Dependent claims 24, 27-28 and 34 further define novel features of the invention of amended independent claims 19 and 33 and each depend, directly or indirectly, from amended independent claims 19 and 33. As discussed above with respect to amended independent claims 19 and 33, Kanevsky and Bodin fail to describe all elements of amended independent claims 19 and 33. Oohara fails to remedy the deficiencies of Kanevsky and Bodin. Thus, dependent claims 24, 27-28 and 34 are believed to be in condition for allowance by virtue of their dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 24, 27-28 and 34 are respectfully requested.

E) Obviousness Rejections Based on Kanevsky in view of Bodin and U.S. Patent No. 7,227,526 (Hildreth).

Claim 35 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky in view of Bodin, further in view of Hildreth.

Dependent claim 35 further defines novel features of the invention of amended independent claim 33 and it depends directly from amended independent claims 33. As discussed above with respect to amended independent claim 33, Kanevsky and Bodin fail to describe all elements of amended independent claims 19 and 33. Oohara fails to remedy the deficiencies of Kanevsky and Bodin. Thus, dependent claim 35 is believed to be in condition for allowance by virtue of its dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claim 35 are respectfully requested.

F) Obviousness Rejections Based on Kanevsky in view of Hildreth.

Claims 36-38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky in view of Hildreth.

Independent claim 36 recites a system for controlling a computer during a medical procedure using one or more hand gestures of a medical person. The system comprises means for capturing, means for processing, means for processing, means for returning, and means for executing. The means for capturing captures a gesture presented by a medical person, in the form of a 3-D Image. The means for processing processes the 3-D image of the gesture to allow recognition thereof. The means for returning returns a computer command associated with the recognized gesture. Different commands are returned associated with different users for the received gesture and the different commands are based on a particular application executing on the computer system, the different commands are executable by the computer system. The means for executing executes the computer command to facilitate manipulation of medical information presented on a display to the medical person.

Applicant submits that the prior art including, Kanvesky and Hildreth, fail to describe or suggest, *means for returning a computer command associated with the recognized gesture, wherein different commands are returned associated with different users for the received gesture and wherein the different commands are based on a particular application executing on the computer system, the different commands are executable by the computer system*, as required by independent claim 36. The Office contends that Kanevsky, at col. 5, ll. 10-16; col. 6, ll. 30-40; col. 7, ll. 55-66; col. 8, ll. 59-62; col. 11, ll. 30-41; col. 31, ll. 7-15; and col. 28, ll. 19-26, in combination with Hildreth, at col. 1, ll. 34-38. At best, Kanvesky describes a recognition system that provides access control based on pre-stored gestures saved in by an

authentication system. Kanvesky fails to describe controlling a computer based on the gestures. Further, Kanvesky does not describe or suggest allowing each user of the system to associate individual gestures with specific commands that control the computer system. Hildreth fails to remedy the deficiencies of Kanvesky. At best, Hildreth describes a hand region used to capture commands. Nothing in Hildreth describes or suggests associating a gesture with specific commands to allow the computer system to individualize gestures used to control the computer system. Further the combination of Kanvesky and Hildreth is deficient because the prior art fails to describe or suggest user selection of association between gesture and commands as required by independent claim 36.

Unlike Kanvesky and Hildreth, alone or in combination, the invention of independent claim 36 requires, among other things, means for returning a computer command associated with the recognized gesture, wherein different commands are returned associated with different users for the received gesture and wherein the different commands are based on a particular application executing on the computer system, the different commands are executable by the computer system. Kanvesky and Oohara fail to expressly or inherently describe or suggest all elements of the invention of independent claim 36. Accordingly, for at least the above reasons, Applicant respectfully requests withdrawal of the obviousness rejection and allowance of independent claim 36.

Dependent claims 37-38 further define novel features of the invention of independent claim 36 and each depend directly from independent claim 36. Accordingly, for at least the reasons set forth above with respect to independent claim 36, dependent claims 37-38 are believed to be in condition for allowance by virtue of their dependency. See 37 C.F.R. §

1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claims 37-38 are respectfully requested.

G) Obviousness Rejections Based on Kanevsky and Oohara in view of U.S. Patent No. 6,111,580 (Kazama).

Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky in view of Kazama.

Dependent claim 7 further defines novel features of the invention of amended independent claim 1 and it depends directly from amended independent claims 1. As discussed above with respect to amended independent claim 1, Kanevsky and Oohara fail to describe or suggest all elements of amended independent claim 1. Kazama fails to remedy the deficiencies of Kanevsky and Oohara. Thus, dependent claim 7 is believed to be in condition for allowance by virtue of its dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claim 7 are respectfully requested.

H) Obviousness Rejections Based on Kanevsky in view of Oohara and U.S. Patent No. 7,007,236 (Dempski).

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanevsky in view of Oohara, further in view of Dempski.

Dependent claim 8 further defines novel features of the invention of amended independent claim 1 and it depends directly from amended independent claims 1. As discussed above with respect to amended independent claim 1, Kanevsky and Oohara fail to describe or suggest all elements of amended independent claim 1. Dempski fails to remedy the deficiencies of Kanevsky and Oohara. Thus, dependent claim 8 is believed to be in condition for allowance

by virtue of its dependency. See 37 C.F.R. § 1.75(c). As such, withdrawal of the obviousness rejection and allowance of dependent claim 8 are respectfully requested.



### **CONCLUSION**

For at least the reasons stated above, the pending claims are now in condition for allowance. Applicants respectfully request withdrawal of the pending rejections and allowance of the claims. If any issues remain that would prevent issuance of this application, the Examiner is urged to contact the undersigned to resolve the same. It is believed that no fee is due, however, the Commissioner is hereby authorized to charge any amount required to Deposit Account No. 19-2112 referring Attorney Docket Number 303183.02/MFCP.155220.

Respectfully submitted,

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